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## THE CRAMBINAE OF FLORIDA\*

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The following is a list of the moths of the subfamily Crambinae so far as they are known to occur in Florida. The records come both from published accounts and from data collected from museum specimens. I have gone carefully over the material in the National Museum at Washington, and early in March 1922 I had the privilege of spending several days examining the material in the magnificent collection of Dr. Wm. Barnes at Decatur, Ill. It is with his permission that the localities represented there for the various species are included in the present list. I am greatly indebted to him for his kindness and generosity and I take pleasure in acknowledging herewith my gratitude to him for the numerous courtesies he showed me. Several other smaller collections have been visited in which an occasional Florida specimen was found. The available literature has been thoroughly canvassed and, so far as possible, the first author reporting the occurrence of a species in the state has been given credit therefor.

This list contains 36 species and varieties whose occurrence in the state is well authenticated. Three others are listed which, for one reason or another, have no right to the places they have been previously given and hereafter should be dropped. The list for Florida is probably more nearly complete than those for most of the other states, due to the fact that Florida is a favorite collecting ground, especially in winter, and at various times has been visited by many lepidopterists and collectors. So far as I know, however, no one interested especially in the smaller moths has collected consistently throughout the year and it is likely

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that other species will be found whose season of adult activity occurs in the summer or fall.

It is with the hope of stimulating interest in this group that this list is published and also that by the combination of many such small bits a complete list of the Florida insects may some day be possible.

***Argyria argentana* Martyn.**

First reported "aus Georgien in Florida" by Hubner in 1818 as the type locality of *nummulalis* which, by all modern authorities is now accepted as a synonym of *argentana* Martyn. Listed from Florida also by Fernald (1896) and Dyar (1902). In the National Museum there are specimens from Cocoanut Grove (Schwarz), Miami (Schaus) and Ft. Drum. In the Barnes collection there are also specimens from Hastings (Kearfott), Ft. Myers, St. Petersburg (Ludwig), and Crescent City. I have taken it at Orlando and Lakeland.

***Argyria auratella* Clemens.**

Fernald (1896) first reported this species from Florida. The National Museum contains specimens from Tallahassee, and Lakeland (Ainslie). Dr. Barnes has specimens from Everglade and Hastings (Kearfott). This species is widely distributed, having been reported from Nova Scotia and Manitoba to California and Florida.

***Argyria consortalis* Dyar.**

A species described by Dyar (1909) and known only from its type locality, Dade City, Fla.

***Argyria critica* Forbes.**

Described by Forbes (1920) from North Carolina with paratypes in the Barnes collection from Everglade and Hastings. This species had previously been confused with *auratella* and doubtless in many collections still stands under that name.

***Argyria lacteella* Fab.**

The smallest native species of this genus. First recorded from Florida by Fernald (1896). Specimens in the National Museum from Archer, Miami (Schaus), Lakeland (Ainslie) and in Barnes' collection from Fort Myers. Although occurring as far north as Pennsylvania and Maryland, this species covers also the West Indies and Central and South America. I have found it very abundant at times near Lakeland and have taken it also at Orlando and Gainesville. It is very variable in markings which accounts for the half dozen or more names in its synonymy.

***Argyria nivalis* Drury.**

First recorded from the state by Fernald (1896). Dyar (1901) notes one specimen taken at light at Lake Worth. The National Museum contains a specimen from Cocoanut Grove (Schwarz) and Barnes has a specimen from Fort Myers. I have taken it at Lakeland, Orlando and Port Tampa.

***Chilo plejadellus* Zincken.**

The rice stalk-borer. Has never been reported from Florida but in Dr. Barnes' collection there is a single specimen from Hastings.

***Crambus caliginosellus* Clemens.**

This species is included in the Florida list because of a single specimen in Dr. Barnes' collection labeled "Hastings, Fla., Coll. of W. W. Kearfott."

***Crambus decorellus* Zincken.**

There are three specimens in the National Museum taken at Archer in March 1882 and four in Dr. Barnes' collection taken at Fort Myers in April and May. No previous published record from the state.

***Crambus elegans*.**

Two specimens in the National Museum from Miami (Schwarz) and Archer.

***Crambus haytiellus* Zincken.**

Not previously recorded from Florida. The National Museum has specimens from Cocoanut Grove (Schwarz) and Key West and Dr. Barnes, others from Everglades, Fort Myers and Chokoloskee.

***Crambus multilinellus* Fernald.**

Originally described from Florida by Fernald (1887). Specimens are in the National Museum from Hastings and in Barnes' collection from Fort Myers.

***Crambus mutabilis* Clemens.**

First recorded from the state by Grote (1880) under the name *fuscicostellus* Zeller. There are specimens in the National Museum, from Palm Beach (Dyar) and Archer and in Dr. Barnes' collection from Fort Myers and Lakeland. I have taken specimens at Fellsmere, Lakeland, Port Tampa and Orlando. At the latter place it was abundant at light during February and March.

***Crambus praefectellus* Zincken.**

Although widely distributed over the state, this species has not previously been reported from Florida. There are specimens in the National Museum from Jacksonville (Ashmead). I have collected it at Gainesville, Fellsmere, Lakeland and Orlando. At Lakeland larvae were found attacking young corn.

***Crambus quinqueareatus* Zeller.**

This species has heretofore been listed as *hastiferellus* Walker and has been reported from Florida under that name by Felt (1894). A comparison with the type of *quinqueareatus* Zeller in the British Museum made by Dr. McDunnough, shows the common Florida form to be this species. If Felt (1894) is correct in the determination of the species he calls *extorralis* Hulst, it becomes a synonym of *quinqueareatus* for the genitalia are identical. *Hastiferellus* is a northern form originally described from Nova Scotia and apparently never authentically reported from the South. *Quinqueareatus* was described from Texas and has been taken at numerous points in Florida. Felt (1894) is the first to record it from Florida under the name *extorralis* and *hastiferellus*. There are specimens in the National Museum from Palm Beach (Dyar) and Miami (Schaus), in the Carnegie Museum at Pittsburgh from Daytona (Laurent), and in Dr. Barnes' collection from Fort Myers, Chokoloskee, Hastings, Lakeland, LaBelle and

Dade City. I have also taken it at Lakeland, Plymouth and Fellsmere and repeatedly at Orlando, both at light and in the field. It is one of the most abundant species at light at Orlando during February and March.

*Crambus satrapellus* Zincken.

First recorded from the state by Grote (1880). There is one specimen in the National Museum from Dade City, in the Carnegie Museum at Pittsburgh one from Melbourne (Laurent) and in Barnes' collection specimens from Fort Myers, Marco, Dade City, Hastings, and Kissimmee. I have collected it at Orlando, Lakeland, Plymouth and Fellsmere.

*Crambus tripsacus* Dyar.

Described from specimens from Miami (Dyar) and in Barnes' collection there are also specimens from St. Petersburg.

? *Crambus trisectus* Walker.

There are three specimens in the National Museum collection bearing the simple label "Fla." It is very doubtful, however, if these are correctly labeled for otherwise east of the Mississippi River the species is not known to extend farther south than the northern edge of Tennessee. It should not be listed as a Florida species without corroboration.

*Crambus zeelus* Fernald.

Not previously recorded from Florida. One specimen in the National Museum from Lakeland (Ainslie) and several in Barnes' collection from Hastings. I have also taken specimens referable here at Lakeland, Port Tampa and Orlando.

*Diatraea differentialis* Fernald.

This huge species, spreading 1½ to 2¼ inches, was originally described from Florida by Fernald (1888) and all the specimens which I have seen in collections have been from this state. There are specimens in Barnes' collection from St. Petersburg (Ludwig), Fort Myers, Kissimmee, Venice, Chokoloskee and Palm Beach, and one in the National Museum from Fort Myers (Davis).

*Diatraea saccharalis crambidoides* Grote.

This is the destructive sugar-cane moth-borer which also attacks Japanese cane and, much more rarely, corn. According to Holloway (1919) it occurs practically throughout peninsular Florida as far north as Gainesville.

*Diatraea saccharalis saccharalis* Fab.

The typical and more southern form occurring in the West Indies and South America. Dyar (1911) records a single specimen from southern Florida.

*Diatraea zeacolella* Dyar.

Because of the long-standing confusion between this, the larger corn-stalk-borer, and *D. saccharalis crambidoides*, the sugar-cane moth-borer of our southern states, it is difficult to determine just who first reported this species from Florida. Holloway and Loftin (1919) state that it occurs in northern Florida.

**Dicymolomia julianalis** Walker.

The larvae feed in heads of cattail, *Typha latifolia*. A single specimen in Dr. Barnes' collection from Everglade. Not heretofore recorded from the state.

**Dicymolomia pegasalis** Walker.

Recorded from the southern states but never definitely from Florida. There are specimens in Dr. Barnes' collection from Lakeland, Chokoloskee and Glenwood.

**Eoreuma densellus** Zeller.

This species was originally described from Texas while *multilineatella* Hulst was described from Florida. The latter species was reduced to a synonym of the former by Smith (1891) and his verdict was generally accepted until Dyar (1909) showed it to be an error and resurrected *multilineatella* Hulst as a valid species. For these reasons the literature of *densellus* is confused and it is impossible to say to which of the two species reference is made. In the National Museum there are specimens from Palm Beach (Dyar), Cocoanut Grove (Schwarz) and Everglade, and in Barnes' collection from Hastings, Chokoloskee and Everglade.

**Eugrotea dentella** Fernald.

Originally described from Florida by Fernald (1896) and apparently not taken since.

**Eugrotea incertella** Zincken.

Not heretofore recorded from the state. A single specimen in Dr. Barnes' collection from Fort Myers.

**Iesta lisetta** Dyar.

Originally described from Dade City specimens by Dyar (1909). There is other material in the National Museum from Lakeland (Ainslie) and LaBelle. In Dr. Barnes' collection Glenwood and Fort Myers are represented in addition to those given above.

**Platytes acerata** Dyar.

A species described by Dyar (1917) from specimens from Dade City.

**Platytes multilineatella** Hulst.

Originally described from Florida by Hulst (1887). Long considered a synonym of *densellus* but resurrected and differentiated by Dyar (1909). There are specimens in the National Museum from Palm Beach (Dyar) and Dade City, and in Barnes' collection from Glenwood (Barnes), Hastings (Kearfott) and Chokoloskee. It has been taken at Orlando and Fellsmere by the writer.

**Platytes punctilineella** B. & McD.

Described by Barnes & McDunnough (1913) from Everglade. There are other specimens in Barnes' collection from Fort Myers and Marco.

**Platytes squamulellus** Zeller.

Not heretofore reported from the state. Three specimens in Barnes' collection from Everglade, one of which bears a label to the effect that it

has been compared with the presumable type of *squamulellus* in the British Museum.

? *Prionapteryx nebulifera* Stephens.

Hampson (1895) records this species from Florida without giving his authority. It may be an error as no other authors before or since so listed it.

*Prionapteryx serpentella* Kearfott.

Originally described by Kearfott (1908) from specimens from Cocoanut Grove (Schwarz). There is also another specimen in the National Museum labeled "Egmont", a place I have been unable to locate.

*Raphiptera minimella* Robinson.

Not heretofore recorded from the state. It has been taken at Orlando and Lakeland by the writer. There is a specimen in Dr. Barnes' collection from Hastings and two in the collection of the Carnegie Museum at Pittsburgh from Melbourne.

*Thaumatopsis actuellus* B. & McD.

Described from Florida material from Lakeland and St. Petersburg by Barnes & McDunnough (1918). Also a paratype in their collection from "Stemper, Fla.", another place I cannot locate.

? *Thaumatopsis fernaldellus* Kearfott.

In listing his paratypes of this species, Kearfott mentions one from Key West. Later, however, Barnes & McDunnough described *T. floridellus* and placed this Key West specimen under that name so that there is no record to show that *fernalldellus* occurs in the state and it should not be so listed.

*Thaumatopsis floridellus* B. & McD. (1913).

The type material for this species came from Everglade and Marco. There is also in Barnes' collection the Key West specimen mentioned above.

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## PERSONALS

Among the new assistant nursery inspectors are: C. C. Bennett, stationed with Fogg at Eustis; J. L. Lazenby, at New Smyrna; and O. D. Link at Clearwater.

The stork has passed out several favors to our members since our last issue, as witness U. C. Loftin, Jr., and Edward Murrell Brown. Mr. James T. Marsh is also the proud father of a boy.

Mr. C. M. Hunt reports bag worms as damaging 25% of the fruit in a grove in Polk County. This is much the highest percent of damage from this insect of which we have ever heard.

Mr. F. F. Bibby is now located at Tlahnalilo, Durango, Mexico. He is employed by the Federal Horticultural Board on pink boll-worm work.

The State Plant Board has found a spider mite on *Bauhenia* not only new to Florida but one hitherto reported only from Hawaii. It is *Eupalopsis pavoniformis*.

Mr. Jeff Chaffin has for the past month been acting as Assistant to the Associate Entomologist of the State Plant Board. Mr. Hunt has taken his place in the Nursery Inspection Department.

Introducing the two new members elected at the February meeting of the Society: Mr. Walker is a vocational student in the University who is much interested in Entomology. He is acting as part time assistant in the Entomological Department of the State Plant Board. Mr. Trigg holds an industrial fellowship given thru the National Research Council. His work is the in-

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### THE BOSTON MEETINGS

The American Association for the Advancement of Science met in Boston during the holidays. Most of the meetings were held in the Massachusetts Institute of Technology, Cambridge. Dr. Charles D. Walcott, secretary of the Smithsonian Institution was elected president for the current year. The retiring president, E. H. Moore, of the University of Chicago, delivered an address on the subject "What is a Number?"

Dr. William M. Wheeler of Bussey Institute was elected president of the American Society of Naturalists and A. Franklin Shull, University of Michigan, secretary. Two joint programs were presented: "The Development of Biology (particularly Genetics) in the past Sixty Years", and a symposium on "Geographical Distribution of Animals". At the banquet Dr. Wheeler gave his presidential address on "Academic Biology".

The Entomological Society of America elected Arthur Gibson president and Professor C. L. Metcalf of the University of Illinois secretary. Wednesday's program was devoted to a symposium divided into two sections: Part 1 on "Noteworthy examples of Adaptation of Insects to Special Environments", and Part 2 dealing with adaptation in a single species of insect or with a single unit of adaptation. The annual public address of the Society was given Wednesday evening by Professor W. M. Wheeler. His subject was "The Physiognomy of Insects". This was a very instructive and interesting address. The subject selected for the symposium at the Cincinnati meeting in 1923 is "Methods of Protection and Defense Among Insects".

The 25th Annual Meeting of the Economic Entomologists, under the presidency of J. C. Saunders and with A. F. Burgess secretary, was held on Thursday, Friday, and Saturday, with a

record for large attendance of members and visitors. Much of the program was devoted to experimental work on insecticides. Some of the large insect problems were presented and discussed. However nothing was said about the boll weevil. A feature of the meeting was an exhibit of the Gypsy Moth and the European Corn Borer displayed by the U. S. Bureau of Entomology.—A. H. Beyer.

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### DELPHASTUS AT BRADENTOWN

A recent trip to Bradentown afforded an opportunity to visit the citrus grove in which the California Delphastus was liberated in 1917 and where they have been most successful in controlling the whitefly. In only one small section of the grove was there enough whitefly to perceptibly blacken the trees and there the Delphastus was found. Were it not for the purple scale and rust mite this grove would not have needed spraying for the past five years. But in order to control the scale the grove has been sprayed about once a year. There were some signs of the Entomogenous fungi and undoubtedly the annual sprayings have also contributed to the control of the whitefly, and incidentally killed many of the beetles, but it would appear as if the Delphastus has been the major factor in the commercial control of the whitefly during the past five years. Indeed from the standpoint of their spread over the state they have been too successful. They have reduced their food to such a degree that they themselves are too scarce to make their collection practicable. The lady beetles have been pretty well distributed over the state but no systematic effort has been made to follow up these introductions and determine whether the beetles have established themselves. They are so small and quick to drop at the least jar that no one without experience with them would be likely to find them unless they were very abundant. In a grove at Crescent City they were much in evidence one summer but seemed to diminish in numbers during the winter. It is possible that they are better adapted to the southern part of the state.

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### A NEW MEALY BUG PREDATOR FOR FLORIDA

The Department of Entomology of the Experiment Station has received the first of several shipments of the lady beetle *Scymnus binaeratus*, which has done good work in controlling all species of mealy bugs in California. An effort will be made

to rear these in numbers to be distributed over the state. They seem to bear shipment well, only about 20% of the beetles having died during the long journey without food from California. The Department is very desirous of securing mealy bugs to feed these lady beetles. Any of our readers finding any considerable number of mealy bugs will do a great service by sending a box of them by express collect to the Experiment Station.

—J. R. W.

## AN ADDITION TO THE THYSANOPTERA OF FLORIDA—XI

J. R. WATSON

### 83. *Hoplandrothrips xanthopoides* Bagnall.

This insect was described in 1917 in the Journal of Biological Research from a single male collected in St. Vincent, British W. I. No reference to it has appeared since. The writer recently received from E. S. Sasser, of the Federal Horticultural Board, three females and a male, and numerous larvae collected in the Plant Introduction Gardens in Miami. This find enables us to describe the female.

*Female. Forma macroptera.* Length about 2 mm. (from 1.7 to 2.2 mm.). Color similar to the male. In my specimens the base of antennal segment 6 is yellow as well as segments 3, 4, and 5 and abdominal segment 8 is yellow in the middle only. Head, thorax, and sides of the abdomen with much red hypodermal pigment.

*Measurements:* Head, length 0.25 mm., width 0.21 mm.; prothorax, length 0.18 mm., width, including coxa, 0.36 mm.; antennae, segment 1, 40; 2, 57; 3, 88; 4, 85; 5, 67; 6, 59; 7, 54; 8, 36 microns long. Mouth cone shorter than in the male, not reaching the mesosternum. Postocular bristles shorter than in the male, but little longer than the eyes. Fore femora considerably enlarged but not nearly as large as in the male, with a small tooth on the inner side near the end (not evident in all specimens.) Tooth of the fore tarsus well developed but much shorter than in the male. Wings somewhat constricted in the middle, 7 to 9 interlocated bristles.

*Male.* In my specimen the postocular bristles are even longer than described by Bagnall, about 1.5 as long as the eye, greatly enlarged and funnel-form at the tip, sharply curved outward. The fore tibia has the tooth characteristics of the genus. Fore tarsus with a long, powerful tooth. Only 9 interlocated hairs on the fore wings in the place of the 12 in Bagnall's specimen.

*Larva.* Light grayish brown but so liberally provided with red hypodermal pigment as to appear red.

Collected by Mr. W. B. Wood of the Federal Horticultural Board from *Moringa oleifera*, *Ziziphus mauritiana*, *Atalaya hemiglauc*, and *Randia tomentosa* Feb. 1923.

## ARTICLES ON FLORIDA INSECTS

In the Canadian Entomologist for January, LV No. 1, Dr. W. S. Blatchley publishes "Notes on the Coleoptera of Southern Florida with Description of New Species".

In the Bulletin of the Brooklyn Entomological Society for February, Vol. XVIII No. 1, Mr. E. L. Bell has an article on "Collecting Florida Butterflies in March". He took 63 species in three weeks about Tampa.

In the Trans. Am. Ent. Soc., XLVIII, No. 831, the same author describes *Thorybes confusus*, a new skipper butterfly from Florida.

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## MEETINGS OF THE SOCIETY

Jan. 31, 1923. The Society met in Language Hall with Dr. Montgomery in the chair. Members present were Watson, Merrill, Floyd, Beyer, Montgomery, O'Byrne, Goodwin, Chaffin, Brown, and Lazonby.

The following officers were elected for 1923: President G. B. Merrill, Vice President Dr. J. S. Rogers, Secretary A. H. Beyer. The present staff of the Entomologist was reelected.

Faurtino Q. Otones, a recent visitor to the University who is connected with the Bureau of Agriculture of the Philippine Islands, was elected a member of the society.

The president appointed Dr. Berger, Prof. Watson and A. H. Beyer a committee to draft a resolution of the Society urging the City Board of Health of Gainesville to institute an anti-mosquito campaign and pledging the Society's aid in conducting such a campaign.

The first subject of the evening was a report of the Florida Antimosquito Association's meeting at Daytona, by Dr. E. W. Berger. He spoke of the reports of the successful campaigns being conducted at Perry, Fernandina, and Miami. There were 150 people at the meeting.

Mr. Merrill gave a summary of the Boston entomological meetings. Dr. Berger read a letter from Prof. Fawcett who is in Russia with a Quaker relief unit.

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Feb. 28, 1923. The regular February meeting was held in Language Hall with President Merrill in the chair. Members present were Stirling, Montgomery, Floyd, O'Byrne, Merrill, Berger, Brown, and Beyer, and Mr. Fred W. Walker and Mr. R. L. Trigg, visitors.

The address of the retiring president was given by Mr. Frank Stirling on "Commercial Entomology". The speaker presented a number of interesting phases which were discussed freely by those present. Dr. Berger exhibited an unusually strong colony of *Vedalia* on Cottony Cushion Scale. Mr. Walker and Mr. Trigg were elected to membership in the Society.

March 28. The meeting was called to order by the president, Geo. B. Merrill, with the following members present: Chaffin, Merrill, Hunt, Trigg, Ayers, Floyd, Montgomery, Watson, Berger, Rogers, Walker and Beyer.

Mr. A. H. Beyer, Business Manager of the FLORIDA ENTOMOLOGIST, gave a report on the finances which was approved by the Society and a copy was filed with the minutes.

The president called on the first speaker of the evening, Prof. J. R. Watson, who spoke on "Sulphur Dust for the Control of Purple Mite and Rust Mite". Prof. Watson pointed out the following interesting facts regarding dusting: that it is safer than spraying, no danger of burning foliage; the cheapness is an outstanding feature, only one-fourth the cost of spraying, no water to haul; and it covers the ground quickly—the greatest advantage. Disadvantages: no dust will control whitefly, therefore a spraying and a dusting machine are necessary for the same grove, a heavy expense to the small grower. Dusting may not last as long as the spray application. Mr. Yothers' dusting results were quoted where he recorded effective control of Purple Mite on citrus with a temperature of 95 or above but not at a temperature below 85. Prof. Watson also mentioned the lack of fertility of Blackberry hybrids often being laid to thrips injury.

The Vice President, Dr. Rogers, called on the next speaker, A. H. Beyer, whose subject was "Nicotine Dust for the Control of Bean Jassid and Pea Aphis". But two important phases of this paper were summarized owing to the short time: first, the method of application of dust; second, the importance of the strength of the dust. A duster producing a continuous flow of dust was found most satisfactory for speed and efficiency; a covering over plants to confine dust also found valuable. Dusts that were used gave best results where they were most heavily impregnated with nicotine sulphate ranging from 5 to 10 percent, in which case the nymphs of the bean jassid were largely controlled while the adults were not affected. The pea aphid was well controlled where the dust came in contact with the bodies of the insects.—A. H. Beyer, Secretary.

## STUDIES ON ENTOMOGENOUS FUNGI

During the month of December the writer spent his vacation in Harvard University in the Department of Cryptogamic Botany studying the forms of entomogenous fungi collected in Florida the past year, with special attention to those which are parasitic on insects of citrus. No study was made of the sooty mould fungus which occurs abundantly in different stages.

The fungi studied in this collection covered most of the species described from Florida. There was one exception however and this is an interesting fungus occurring sparsely under several different serial numbers in the writer's collection. It is a *Coniothyrium*-like growth. This fungus has good typical *Coniothyrium* spores, but the pycnidial walls are quite thick and almost carbonaceous. According to literature and authorities consulted it seems to be of rare occurrence, and it is thought probable that it may be a conidial stage of some well-known fungus, but thus far no connection has been traced with the forms commonly met on citrus. This form may be recognized by having small round dark spots, surrounded by, and occasionally filled with, spherical, somewhat pointed bodies, the pycnidia.

Another interesting note made in the course of the writer's taxonomic studies of his collection of *Microcera coccophilia* (Desm.) was that all specimens examined showed spores somewhat smaller than is general for this species. However they came within the measurements.—A. H. Beyer.

## PERSONALS

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(Continued from page 55)

vestigation of the effects of sulphur on the root knot nematode. He is also pursuing graduate work in the University and has undertaken the preparation of an annotated list of the Heteroptera of the Gainesville region. He is a graduate of Mississippi A. and M. College.

Mr. Fritz Fuchs has resigned from the State Plant Board to take charge of the grove of Mr. Frederick at Fruitland Park.

Mr. T. J. Iles of Crescent City reports that he finds lime-sulphur at rust mite strength, 1:70, applied at a pressure of 275 pounds, a very efficient control measure for mealy bugs. During the past three years he has sprayed 6,000, 93,000 and 45,000 trees respectively.

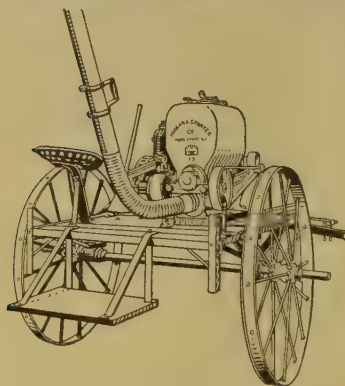
Mr. A. C. Mason has been transferred to Lindsay, Cal., to work on the California Citrus Thrips.

Mr. F. M. Bather, a member of the Brooklyn Institute of Arts and Sciences of N. Y., and Mrs. Bather, spent part of February in Gainesville collecting lepidoptera.

Other recent visitors to the campus were Prof. Lounsberry of South Africa and Prof. Craighead of the Pennsylvania Station, and C. B. Pierson of Los Angeles, Cal.

### THE PALMETTO WEEVIL CATCHES A RIDE

Mr. Chris Waldron of East Palatka writes as follows: "Enclosed see specimen of a beetle found clinched fast on a five months' old chick's head, clinched so tightly that it seemed impossible to tear it loose without injury to the chick. I dropped kerosene oil on the beetle until it loosened." The insect was the palmetto weevil (*Rhynchophorus cruentatus*). As this large beetle is over an inch in length and of corresponding breadth and thickness, it must have been something of a load for the chick. It would be interesting to know how the weevil happened to attach itself to the chick's head. Did the chick attempt to lunch on the beetle only to find the tables turned on him?



NIAGARA COMBINATION DUSTER

This is the Niagara Power Potato Duster. Shown here fitted with flexible distributor pipe and drop platform for use in orchard dusting. For grower having both orchard and low crops to protect. Only driver needed for dusting potatoes, etc. Driver and one man to operate distributor pipe needed for orchard use.

### DUSTING costs less than liquid spraying.

Dusting materials cost more than materials for liquid spraying, but this is more than counterbalanced by the big saving in time and labor, less cost of the duster, and much smaller depreciation, repairs, and operating cost.

Dusting differs from spraying chiefly in that Insecticides and Fungicides are applied in a powdered form; dry instead of wet. Water merely carries the active ingredients to the plant, where it evaporates and leaves a dry powder. Spraying requires 50 lbs. of water to carry 1 lb. of poison to the foliage. In dusting air is the carrier; it is ever present and does not have to be pumped and carried. The chemicals used are fundamentally the same with either product.

For further information write our Distributor

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**NIAGARA SPRAYER COMPANY**  
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## "BLACK LEAF 40"

(Sulphate of Nicotine—40% of Nicotine)

For liquid spraying against aphid, thrips, leaf-hoppers, etc. May be combined with other standard spray-chemicals. Always dependable and efficient.

"Black Leaf 40" is, in Very Truth, "The Old Reliable"

### PRICES

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| ½-lb. tin.....  | \$ 1.25 |
| 2-lb. tin.....  | 3.50    |
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## "BLACK LEAF"-F1-NICOTINE DUST

Contains Over 1¼% of Actual ("Free") Nicotine

Made from our own high-strength ("Free") Nicotine. Thoroughly standardized as to strength and texture. Recommended for dusting vegetables to destroy aphid.

### PRICES

F. O. B. Richmond, Va.

|                   |         |
|-------------------|---------|
| 5-lb. tin.....    | \$ 1.00 |
| 25-lb. drum.....  | 3.50    |
| 50-lb. drum.....  | 6.25    |
| 100-lb. drum..... | 11.75   |

## "BLACK LEAF"-F2-NICOTINE DUST

Contains Over 2% of Actual ("Free") Nicotine

Is stronger in nicotine than our—F1—Dust, but otherwise, is the same. Recommended against the more resistant insects, such as cucumber beetle, pea aphid, etc.

### PRICES

F. O. B. Richmond, Va.

|                   |         |
|-------------------|---------|
| 5-lb. tin.....    | \$ 1.25 |
| 25-lb. drum.....  | 4.50    |
| 50-lb. drum.....  | 8.25    |
| 100-lb. drum..... | 15.50   |

"Black Leaf" products are sold by seedsmen, hardware stores, drug stores, general merchants, and dealers in horticultural supplies.

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